

CLAIMS

1. An ultrasonographic apparatus, comprising: an ultrasonic probe for transmitting/receiving an ultrasonic wave to/from a patient; means for generating an ultrasonic transmission signal and transmitting it to the ultrasonic probe; means for performing reception processing on a reflection echo signal received by the ultrasonic probe; means for re-constructing a form image according to the reception signal processed by the reception processing means; means for re-constructing an elasticity image according to the reception signal processed by the reception processing means; means for displaying the form image and the elasticity image; means for switching between the form image mode and the elasticity image mode; and means for performing control so as to selectively acquire the form image and the elasticity image in the measurement period of the elasticity image mode switched by the mode switching means.
- 20        2. The ultrasonographic apparatus according to Claim 1, wherein the control means switches between the form image re-construction means and the elasticity image re-construction means according to the selection of the form image or the elasticity image.
- 25        3. The ultrasonographic apparatus according to Claim 1,

wherein the transmission means has first transmission signal generating means for generating an ultrasonic transmission signal for the form image; and second transmission signal generating means for generating an ultrasonic transmission  
5 signal for the elasticity image having at least one ultrasonic wave among an ultrasonic wave having a larger amplitude, an ultrasonic wave having a larger wave number and an ultrasonic wave having a lower frequency than those of the ultrasonic transmission signal for the form image.

10 4. The ultrasonographic apparatus according to Claim 3, wherein the control means switches between the first transmission signal generating means and the second transmission signal generating means according to the selection of the form image or the elasticity image.

15 5. The ultrasonographic apparatus according to Claim 1, wherein the reception processing means has first reception processing means for the form image for performing processing with a dynamic filter having a filter characteristic dependent on the depth of the reflection echo  
20 signal; and second reception processing means for the elasticity image for performing processing with a filter having a constant filter characteristic independent of the depth of the reflection echo signal.

25 6. The ultrasonographic apparatus according to Claim 5, wherein the control means switches between the first

reception processing means and the second reception processing means according to the selection of the form image or the elasticity image.

7. The ultrasonographic apparatus according to Claim 1,  
5 wherein the control means performs control, for each frame of each image, so as to selectively acquire the form image and the elasticity image.

8. The ultrasonographic apparatus according to Claim 1,  
10 wherein the control means performs control, for each ultrasonic beam to be irradiated to the patient, so as to selectively acquire the form image and the elasticity image.

9. The ultrasonographic apparatus according to Claim 1,  
15 wherein the control means switches, for each ultrasonic beam to be irradiated to the patient, control for selectively acquiring the form image and the elasticity image with respect to a defined focus area and causes the ultrasonic beam to scan; and

the elasticity image re-construction means re-constructs the elasticity image of the focus area and  
20 displays it over the form image on the display means.

10. The ultrasonographic apparatus according to Claim 1, wherein the control means switches, for each frame of each image or for each ultrasonic beam to be irradiated to the patient, control for selectively acquiring the form  
25 image and the elasticity image during the period from the

time when a measurement start command of the elasticity image mode is input from the mode switching means to the time when a measurement end command is input therefrom.

11. The ultrasonographic apparatus according to Claim 5 1, wherein the display means selectively displays one image of the form image and the elasticity image, an image having both of them one over another and an image having both of the in line.

12. The ultrasonographic apparatus according to Claim 10 1, wherein the mode switching means is at least one of human interface equipment such as a switch provided in the ultrasonic probe, a switch provided in the apparatus body, a foot switch and a keyboard.

13. A method for measuring an elasticity of a 15 biological tissue, comprising the steps of: generating an ultrasonic transmission signal and transmitting it to an ultrasonic probe; performing reception processing on a reflection echo signal received by the ultrasonic probe; re-constructing at least one of a form image and an elasticity 20 image based on the reception signal having undergone the reception processing; displaying at least one of the form image and the elasticity image; switching between a form image mode and an elasticity image mode; and controlling so as to selectively acquire the form image and the elasticity 25 image in the measurement period of the elasticity image mode

switched by the step.

14. The biological tissue elasticity measurement method according to Claim 13, wherein the ultrasonic transmission signal for the elasticity image generated by the transmission step has at least one ultrasonic wave among an ultrasonic wave having a larger amplitude, an ultrasonic wave having a larger wave number and an ultrasonic wave having a lower frequency than those of the ultrasonic transmission signal for the form image.

15. The biological tissue elasticity measurement method according to Claim 13 or 14, wherein the reception processing step switches between and performs first reception processing for the form image for performing processing with a dynamic filter having a filter characteristic dependent on the depth of the reflection echo signal and second reception processing for the elasticity image for performing processing with a filter having a constant filter characteristic independent of the depth of the reflection echo signal.

16. The biological tissue elasticity measurement method according to Claim 13, wherein the control step switches, for each frame of each image, between the ultrasonic transmission signals for the form image measurement and the elasticity image measurement.

17. The biological tissue elasticity measurement

method according to Claim 13, wherein the control step switches, for each ultrasonic beam to be irradiated to the patient, between the ultrasonic transmission signals for the form image measurement and the elasticity image measurement.

5        18. The biological tissue elasticity measurement method according to Claim 18, wherein the control step scans an ultrasonic beam by the ultrasonic transmission signal for the elasticity image measurement with respect to a defined focus area; and

10        the image re-construction step re-constructs the elasticity image of the focus area and displays it over the form image on the display means.

15        19. The biological tissue elasticity measurement method according to Claim 13, wherein the control step switches, for each frame of each image or for each ultrasonic beam to be irradiated to the patient, control for selectively acquiring the form image and the elasticity image during the period from the time when a measurement start command of the elasticity image mode is input to the  
20        time when a measurement end command is input.

20        20. The biological tissue elasticity measurement method according to Claim 13, wherein the measurement start and end commands of the elasticity image mode are input from at least one of human interface equipment such as a switch  
25        provided in the ultrasonic probe, a switch provided in the

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apparatus body, a foot switch and a keyboard.